SESSION 5

ECONOMIC EVALUATIONS

OVERVIEW

- ECP vs ECM
- Types of Savings
- Project Economics
- Rules of Thumb
- Examples
- Conclusion

ECP DEFINITION

- **ENERGY CONSERVATION PROJECT (ECP):** A project to retrofit or replace a single energy consuming system, i.e., exit lighting, warehouse lighting, office lighting, central heating/cooling, office cooling, etc. ECPs may be combined to form an Energy Conservation Measure (ECM).
- **ENERGY CONSERVATION MEASURE (ECM).** An initiative to improve the energy efficiency of a facility or group of facilities. For purposes of this contract a ECM is equivalent to a contract task order which may consist of a single ECP or multiple ECPs. ECMs shall not exceed a ten-year simple payback.

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ECP vs. ECM

- ECPs can have more than 10 year pay-back
  - Common sense required
  - Life of equipment
- ECM should not exceed a 10 year simple pay-back
- ECM - Combine ECPs

TYPES OF SAVINGS

- Energy
  - BTUs and Dollars
  - No BTUs but Dollars
  - BTUs but No Dollars
  - Escalation is not recommended
- Ancillary
  - O&M
  - Capital Investments
  - Other

ENERGY DOLLAR SAVINGS

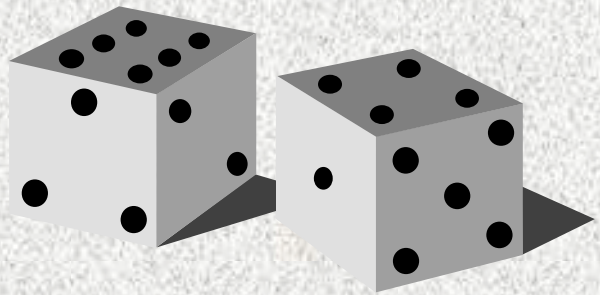
- Use data on Utility Bill
  - Consumption
  - Demand
  - Fixed Costs
- Don’t use reimbursable sales rate or blended rate

ANCILLARY SAVINGS

- O&M
  - Existing Service Contracts
  - Supplies
  - Manpower
- Capital Investment
- Other
  - Water

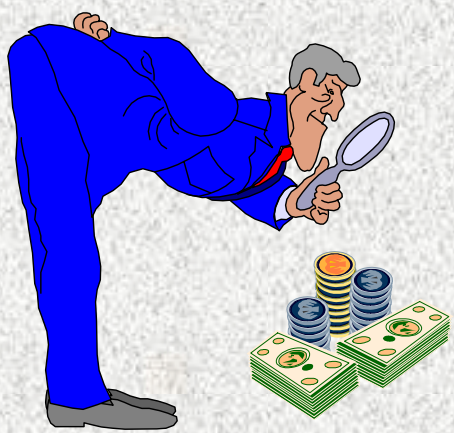
PROJECT ECONOMICS

- What's Included?
  - Savings Produced
  - Contractor Investment
  - Rebates/salvage value



SAVINGS PRODUCED

- Current utility rates, including demand, on/off-peak rates, etc.
- Energy consumption of existing equipment based on ACTUAL operating conditions
- O&M costs of the existing/new equipment
- Estimated annual consumption for proposed systems
- Estimated annual energy savings, net O&M costs/savings



CONTRACTOR INVESTMENT

- Capital Costs
- O&M Costs
- Construction Costs

ECONOMIC ANALYSIS

- Project cost estimate:
  ESCO prepares - Gov't reviews/approves
- Life cycle cost economic analysis:
  ESCO prepares - Gov't reviews/approves
- Estimate energy and other cost savings:
  ESCO prepares-Gov't reviews/approves
- Prepare private sector financial analysis:
  ESCO prepares - Gov't reviews/approves
- Evaluate results of economic and financial analysis:
  ESCO prepares - Gov't reviews/approves
- Government cost estimate:
  Gov't performs a "Should-cost analysis"

TOOLS TO USE

- **LCCID**, Developed by CERL for MILCON, ECIP projects
  - User friendly (Windows based)
  - Savings/costs identified
  - Structured input, can't be locally adjusted by user
- **BLCC**, Developed by DOE for all facility projects
  - Input variables can be adjusted
  - Mid-year design/construction
  - Output doesn't address all life-cycle issues

EXAMPLES

- Lighting Project (ECP)
  - Cost $ 265,000 annual savings $ 50,000
  - SIR: 2.55 simple payback: 5.3 yrs
- Chiller Project (ECP)
  - Cost $695,000 annual savings $55,000
  - SIR: 1.26 simple payback: 12.6 yrs
- Combined ECPs (ECM)
  - Cost $960,000 annual savings $105,000
  - SIR: 1.61 simple payback: 9.14 yrs

ECONOMICS OF ESPC

- Finding the simple payback of an ESPC
  - Costs:
    - Audits and Design costs $5,000
    - Construction cost of materials, labor, set-up, permits $100,000
    - Finance charge for construction loan only $5,000
  - Salvage value of existing equipment (if any) -$5,000
  - Utility incentives/rebates applied to loan (if any) -$5,000
  - Total investment to install ECM $100,000

ECONOMICS OF ESPC (Con't)

- Total investment to install ECM $100,000

- Annual energy savings from ECM:
  - Energy savings (energy and demand) $11,000
  - O&M savings(validated) $1,000
- Total annual energy savings $12,000

- For a Simple Payback:
  - Cost of Investment/Total annual savings =

$$\frac{\$100,000}{\$12,000} = \textbf{8.33 yrs}$$

CONCLUSION

- This provides a sanity check with something you're familiar with.
- If it's not cost effective when using "our" dollars it will not be cost effective using ESPC
- Gives you all the numbers on one sheet, easy to assess the pros/cons.
- Not the ONLY factor in deciding on ESPC.

QUESTIONS?